## CLAIMS

We claim:

1. A device for tilting or synchronized chairs, comprising: a supporting frame; at least one mobile frame coupled with the supporting frame; an elastic member coupled with the mobile frame and the supporting frame; a stiffness adjustment mechanism coupled with the elastic member; a locking mechanism for engaging the mobile frame with the supporting frame; and an actuation device for engaging and disengaging the locking mechanism, wherein the actuation device may be selectively activated by a control knob, wherein the actuation device includes: a rocker arm coupled with the control knob that swings around a fulcrum; and a return arm that is generally rigid and non-deformable, the return arm is connected to the end of the rocker arm that the locking mechanism is attached; wherein the rocker arm has at least two positions of stable equilibrium that are determined by the engagement or disengagement of the locking mechanism; and wherein the rocker arm comprises a lever arm positioned between the fulcrum and the return arm, the rocker arm is adapted to undergo elastic deformation due to the effect of an operation of the control knob, which moves the rocker arm between the positions of stable equilibrium, and whenever during the operation of the device there are opposing forces on the locking mechanism that prevent the movement of the return arm, the accumulation of the elastic deformation energy in the rocker arm moves the return arm upon the decrease of the opposing forces.

2. The device of claim 1, wherein the lever arm includes a solution of continuity adapted to give to the lever arm a different flexural strength depending on the direction of rotation of the rocker arm.

3. The device of claim 2, wherein the lever arm includes a first shank and a second shank.

4. The device of claim 1, wherein the actuation device includes: a shaping associated with the rocker arm; and a protrusion associated with the supporting frame and adapted to cooperate to form a slip fit.

5. The device of claim 1, wherein an elastic element is inserted between the locking mechanism and the return arm.

6. The device of claim 1, wherein the locking mechanism includes at least one pin slidably coupled within in a housing formed in the return arm, wherein the pin is adapted to be positioned within a hole defined in the supporting frame, and wherein the pin is adapted to be selectively engaged within at least one hole defined in the mobile frame.

7. The device of claim 6, wherein the elastic member includes a spring that is external and coaxial to the pin, wherein the spring extends between a collar of the pin and a rim formed in the return arm.

8. The device of claim 1, wherein the elastic member includes at least one spring and a support element that is adapted to move along to the axis of the spring due to the effect of a contact by resting on inclined surfaces with a cursor, wherein the cursor is adapted to slide on a control pin, and resting in a swiveling way against a locator pin, parallel to the control pin.

9. The device of claim 8, wherein the control pin is supported by the supporting frame by an oversized hole adapted to allow small movements of the control pin in order to permit the cursor to tilt in relation to the locator pin.

10. The device of claim 1, wherein the control knob is coaxially attached to a lever, wherein the control knob permits the user a further control or adjusting action.

11. A device for tilting or synchronized chairs, comprising: a supporting frame; at least one mobile frame coupled with the supporting frame; means of elastic return coupled with the mobile frame and the supporting frame; stiffness adjustment means coupled with the means for elastic return; locking means for engaging the mobile frame with the supporting frame; and means for engaging and disengaging the locking mechanism that may be selectively activated by a control knob, wherein the actuation device includes: a rocker arm coupled with the control knob that swings around a fulcrum; and a return arm that is generally rigid and non-deformable, the return arm is connected to the end of the rocker arm that the locking means is attached; wherein the rocker arm has at least two positions of stable equilibrium that are determined by the engagement or disengagement of the locking means; and wherein the rocker arm comprises a lever arm positioned between the fulcrum and the return arm, the rocker arm is adapted to undergo elastic deformation due to the effect of an operation of the control knob, which moves the rocker arm between the positions of stable equilibrium, and whenever during the operation of the device there are opposing forces on the locking means that prevent the movement of the return arm, the accumulation of the elastic deformation energy in the rocker arm moves the return arm upon the decrease of the opposing forces.

12. The device of claim 11, wherein the lever arm includes a solution of continuity adapted to give to the lever arm a different flexural strength depending on the direction of rotation of the rocker arm.

13. The device of claim 12, wherein the lever arm includes a first continuous shank and a second interrupted shank.

14. The device of claim 11, wherein the means of engagement includes: a shaping associated with the rocker arm; and a protrusion associated with the supporting frame and adapted to cooperate to form a slip fit.

15. The device of claim 11, wherein an elastic element is inserted between the locking means and the return arm.

16. The device of claim 11, wherein the locking means includes at least one pin slidably coupled within in a housing formed in the return arm, wherein the pin is adapted to be positioned within a hole defined in the supporting frame, and wherein the pin is adapted to be selectively engaged within at least one hole defined in the mobile frame.

17. The device of claim 16, wherein the elastic member includes a spring that is external and coaxial to the pin, wherein the spring extends between a collar of the pin and a rim formed in the return arm.

18. The device of claim 11, wherein the means of elastic return includes at least one spring and a support element that is adapted to move along to the axis of the spring due to the effect of a contact by resting on inclined surfaces with a cursor, wherein the cursor is adapted to slide on a control pin, and resting in a swiveling way against a locator pin, parallel to the control pin.

19. The device of claim 18, wherein the control pin is supported by the supporting frame by an oversized hole adapted to allow small movements of the control pin in order to permit the cursor to tilt in relation to the locator pin.

20. The device of claim 11, wherein the control knob is coaxially attached to a lever, wherein the control knob permits the user a further control or adjusting action.

21. A device for tilting a seat and backrest frame between two or more positions, comprising: an outer shell having a front portion and at least one guide associated therewith, the front portion of the outer shell being coupled with the seat; an elastic member coupled with the outer shell; a stiffness adjustment mechanism coupled with the elastic member; a locking mechanism for engaging the outer shell with the backrest frame; and an actuation device for engaging and disengaging the locking mechanism, wherein the actuation device may be selectively activated by a control knob, wherein the actuation device includes: a rocker arm coupled with the control knob that swings around a fulcrum; and a return arm that is generally rigid and non-deformable, the return arm is connected to the end of the rocker arm that the locking mechanism is attached; wherein the rocker arm has at least two positions of stable equilibrium that are determined by the engagement or disengagement of the locking mechanism; and wherein the rocker arm comprises a lever arm positioned between the fulcrum and the return arm, the rocker arm is adapted to undergo elastic deformation due to the effect of an operation of the control knob, which moves the rocker arm between the positions of stable equilibrium, and whenever during the operation of the device there are opposing forces on the locking mechanism that prevent the movement of the return arm, the accumulation of the elastic deformation energy in the rocker arm moves the return arm upon the decrease of the opposing forces; a first pin associated with the return arm and being coupled with the outer shell, wherein the first pin is coupled with the backrest frame; and a second pin coupled with the elastic member and positioned within the guide formed in the outer shell, wherein the portion of the second pin is coupled with the backrest frame, wherein the backrest frame is coupled with the seat, and wherein the seat and backrest frame move between positions as the backrest frame rotates about the first pin and as the second pin slides within the guide formed in the shell.

22. The device of claim 21, wherein a hinge mechanism couples the front portion of the outer shell with the seat.

23. The device of claim 22, wherein the hinge mechanism includes a third pin and a link, wherein the third pin is coupled with the outer shell, and wherein the link is coupled with the third pin and the seat.

24. The device of claim 21, wherein the backrest frame provides support for a backrest.

25. The device of claim 21, wherein the backrest frame includes a protrusion that is coupled with the seat.

26. The device of claim 21, wherein the guide is a slot formed in the outer shell.